

# Space News Roundup

Vol. 34

April 28, 1995

No. 17

## Blast spurs tight security, relief efforts

The recent bombing of a federal building in Oklahoma City has motivated tighter JSC security and prompted an invitation for donations to charities aiding the victims.

JSC Security is advising all employees that general security awareness is being increased at the center. Building, delivery and package checks are routinely conducted at JSC, however identification procedures for entrance to the center are tighter at all gates.

Joel Walker, chief of the Support Operations Division, said security guards at JSC's gates are checking to be sure everyone who enters is in a decaled vehicle or has a site badge. Those who do not are being asked to go to Bldg. 110 for security clearance. Anyone wanting to go to the Gilruth Center will be required to show a site badge, a blue player's badge or an Employee Activities Association dependent's badge.

JSC Security is making available a briefing for employees about how to handle suspected letter bombs and bomb threats, and asking employees to report suspicious activity. Employees may schedule the briefings or report suspicious activity by calling x34441.

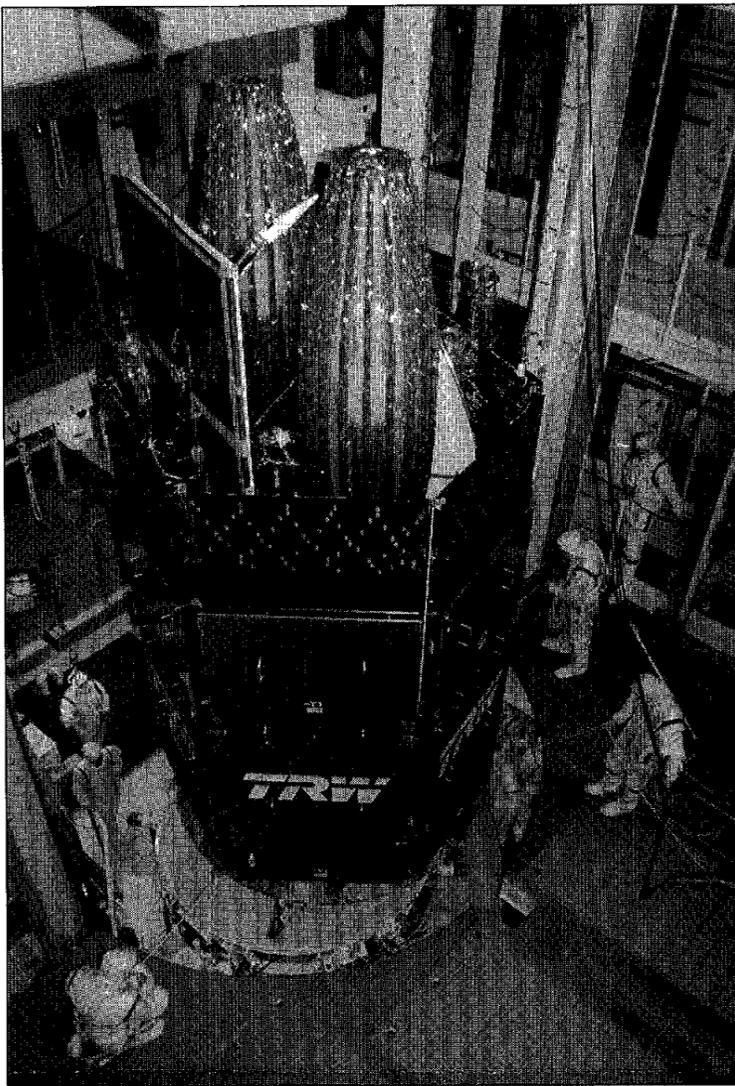
"People who open packages or letters may want to be briefed on identification of this kind of suspicious material," said Security Branch Chief Ken Ramke.

JSC has made it easier for employees to deal with telephone bomb threats by including a form on Page 85 of the JSC phone book.

Meanwhile, the Office of Personnel Management has issued a list of organizations participating in relief efforts. The American Red Cross, Children Charities of America, America's Charities, Christian Service Organizations, Independent Charities of America, National Black United Federation of Charities, National Voluntary Health Agencies, United Way and the Oklahoma Combined Federal Campaign all are accepting donations for the victims. For additional information on these charities call the JSC Exchange Operations manager at x38970.

The American Federation of Government Employees also has set up a relief fund. The address is 4600 S.E. 29th, Del City, Okla., 73155.

In addition, a relief fund has been set up to assist the families. To contribute to the Oklahoma City Federal Family Assistance Relief Fund, contact Dick Campbell at (405) 270-5157.



Members of the Kennedy Space Center payload processing team hoist Tracking and Data Relay Satellite-G into a work stand in the Vertical Processing Facility for mating with its inertial upper stage.

NASA Photo

## Managers zero in on target dates for next two missions

Engineers at the Kennedy Space Center hauled *Atlantis* to Launch Pad 39A this week as NASA managers zeroed in on target dates for the launch of the next two flights in the shuttle program.

With a Spacelab science module and a special docking system nestled in its cargo bay, *Atlantis* made the 3 1/2 mile trek to its launch pad in the wee hours Wednesday, ready for final preparations for its launch in late June on the STS-71 mission, the first shuttle link up to the Russian Space Station Mir. The five NASA astronauts and two Russian cosmonauts who will ride aboard *Atlantis* to orbit, led by veteran Commander Hoot Gibson, are expected to climb

aboard the shuttle on the pad on May 25 for the final hours of a simulated countdown and engine ignition.

Aboard Mir, U.S. Astronaut Norm Thagard and his two crewmates, Commander Vladimir Dezhurov and Flight Engineer Gennadiy Strekalov, continued biomedical investigations as the time neared for the launch of the new Russian science module Spektr amidst a series of space walks and hardware reconfigurations

to ready Mir for *Atlantis*' arrival. Spektr is scheduled to blastoff atop a Proton rocket from the Baikonur Cosmodrome sometime between May 21-25 for a week-long journey to automatically dock to Mir. An exact launch date for Spektr is expected soon.

Once Spektr has been linked to the space station, it will be rotated

into its final position through the use of a manipulator arm and its systems will be activated. Spektr's arrival, coupled with the transfer of one solar array from the Kristall module to the Kvant-1 module and repositioning of Kristall and docking port equipment, will signal Mir's readiness for the launch of *Atlantis*,

currently targeted for around June 24. Dezhurov and Strekalov plan to conduct four space walks in support of this activity. *Atlantis* could launch a few days earlier if work to prepare Mir runs ahead of schedule.

Meanwhile, the final touches are being put on *Discovery* for its rollover to the Vehicle Assembly Bldg. to be mated to its fuel tank and solid rocket boosters for a trip to

Please see STS-70, Page 4



## Mir-18 crew prepares for *Atlantis*' arrival

As the Mir 18 crew continued to prepare for the June arrival of the Space Shuttle *Atlantis*, Astronaut and Cosmonaut Researcher Norm Thagard took time Wednesday to downlink a video status report and do an interview with an Arizona television station.

Thagard shared a video tape shot out the window of his Mir stateroom showing the Houston and Clear Lake areas, as well as his hometown of Jacksonville, Fla.

Storage space continues to be at a premium, Thagard reported, showing a small area where he is keeping all of his gear and experiment equipment. "Every time I want something it seems like its in the back of that closet," he said.

Thagard said his three-month flight is accomplishing its primary goal of proving that the American and

Russian space programs can work together.

"A lot of us believe that future of space is one of international cooperation, so there's a real need to demonstrate that you do this thing cooperatively. I think, for the most part, we have demonstrated that," he said. "There are cultural differences, but I'm really impressed that there are many more similarities, given that we're all in the same profession here, than there are differences."

Thagard noted that he has lost about 13 pounds so far, but that it is not unusual for him to lose weight on a space flight. The food onboard Mir is good, he said, with the notable exception of jellied fish, which he does not eat.

Commander Vladimir Dezhurov, Flight Engineer Gennadiy Strekalov and Thagard have completed their sixth week aboard the orbiting station,



THAGARD

continuing work on life sciences experiments and preparing for the first shuttle docking mission.

Last Friday, the crew finished installing a new gyrodyne unit. Gyrodynes provide attitude control to Mir. This new unit is needed to supplement the station's existing gyrodynes to support *Atlantis*' docking with

Mir. The crew removed the shower/sauna unit on the station located in the Kvant-2 module and installed the new gyrodyne unit in that location. A new shower/sauna unit will be brought up in several pieces aboard a Progress vehicle later this year. In the

meantime, the crew will use "wet wipes" similar to those space shuttle crews use to maintain hygiene during their time in space.

Over the weekend, the crew chemically fixed eight quail eggs. Forty-eight eggs, stored in an incubator, will be fixed at various stages of development. The goal of this experiment is to determine if a microgravity environment causes any abnormalities during embryonic development of higher animals. None of the samples for the Mir 18 experiments will be developed to full term and all the eggs will return aboard *Atlantis* during STS-71.

Tuesday, the crew members measured their body mass. This measurement is part of experiments to investigate the effects of prolonged exposure to microgravity on the fluid and electrolyte balance within the body.



JSC Photos by Jack Jacob

Carol Moore and Denise Whitley, teachers from West Lake, La., assemble a space station during a teacher workshop held last week at Space Center Houston.

## Space station serves as catalyst for teaching

By Norma Rhoads

More than 170 people from 11 states in the U.S. and five provinces in Canada came to the Clear Lake area Saturday to participate in the first International Space Station Educators Conference at Space Center Houston.

Coordinators said the conference allowed attendees to participate in briefings and activities with people who are actually making the dream of the station a reality.

Space Station Program Manager Randy Brinkley, Chief Scientist Larry DeLucas and Boeing's Scott Carson welcomed participants to the conference and provided them with an overview of the station and the science to be performed onboard. The conference included sessions at SCH and JSC together with tours of the station mock-ups in Bldg. 9, the Boeing facilities,

and the KC-135 at Ellington.

Deputy Program Manager Bill Shepherd presented a multi-media presentation at the luncheon on Saturday. Part of Shepherd's message concerned what NASA is providing on the World Wide Web lane of the information superhighway regarding the station.

Members of the Public Affairs Office's Education and Information Services Branch discussed NASA's educational services at a booth on the Plaza.

"The information we gained we will share with the students who attend our summer camps and the teachers in our workshops," said Helen Unruh of the Kansas Cosmosphere and Space Camp.

Teachers liked the fact that NASA cares about educators and the education process, and enjoyed interacting with sci-

entists, engineers, and astronauts, said Patricia Hamilton, SCH conference coordinator.

"Comments on the evaluations from the educators indicate the conference was a great success," she said, adding that the information given can be used in a classroom environment to make learning interesting and exciting.

When asked what she liked best, one educator said "The hands-on presentations and DeLucas' talk. Those demonstrated relevance for the project and link to education."

Another commented on the diversity and quality of the speakers — astronauts to scientists to engineers to educators — and the supporting resource material which was excellent, rich in detail and immediately useful.

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## Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

**Houston Rockets:** Tickets for the first Houston Rockets playoff game cost \$23.50.

**Mystery Dinner Theater:** 7 p.m. May 5 at the Gilruth. Tickets cost \$18.50.

**Bay Area Chorus:** Celebrate the songs of Gershwin at 8 p.m. April 28 at Clear Lake Presbyterian Church. Tickets cost \$8 for adults and \$5 for students and seniors.

**Houston International Festival:** April 22 and 23, 29 and 30. Tickets cost \$3.

**Galveston Home Tour:** May 6, 7, 13 or 14. Tickets cost \$13.75.

**World Championship Ice Skating:** 8 p.m. June 15 at the Summit. Tickets cost \$30.50 for upper prom, \$45.50 for lower prom.

**Loving Feelings Concert:** 7 p.m. Sept. 30 at the Summit. Tickets cost \$32.50.

**Schlitterbahn:** Tickets cost \$17.80 for adults and \$15.30 for children 3-11.

**Seaworld:** Tickets cost \$23.50 for adults and \$16.25 for children 3-11.

**Astroworld:** Early bird tickets cost \$14.70. Season passes cost \$45.50.

**Six Flags:** Tickets cost \$23.70 for a one day pass, \$31.75 for two day pass and \$20.30 supersaver not valid on weekends in June July and August.

**Fiesta Texas:** Tickets cost \$20.35 for adults and \$15.80 for children 4-11 and senior citizens over 55.

**Moody Gardens:** Discount tickets for two of three different attractions: \$9.50

**Space Center Houston:** Discount tickets, adult, \$8.75; child (3-11), \$7.10.

**Metro tickets:** Passes, books and single tickets available.

**Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4; Loew's Theater, \$4.75.

**Stamps:** Book of 20, \$6.40.

**JSC history:** *Suddenly, Tomorrow Came: A History of the Johnson Space Center.* Cost is \$11.

**Upcoming events:** Splashtown tickets available soon.

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## Gilruth Center News

**Sign up policy:** All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

**EAA badges:** Dependents and spouses may apply for photo identification badges from 7 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Dependents must be between 16 and 23 years old.

**Weight safety:** Required course for employees wishing to use the weight room is offered from 8-9:30 p.m. May 9 and 25. Pre-registration is required. Cost is \$5.

**Defensive driving:** Course is offered from 8:15 a.m.-3 p.m. Saturday. Next class is May 13. Cost is \$19.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

**Aikido:** Martial arts class meets from 5-7 p.m. Tuesdays and Wednesdays. Cost is \$25 per month. New classes begin the first of each month.

**Country dancing:** Beginners class meets from 7-8:30 p.m. Mondays; intermediate class meets from 8:30-10 p.m. Mondays. Partners are required. For additional information, contact the Gilruth Center at x33345. New class began April 24.

**Ballroom dancing:** New class begins May 4. Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

**Intercenter Run:** The Spring Intercenter Run begins April 1 and continues to April 30. Walk or run a 2-mile or 10K course and submit times to the center. T-shirts for participants cost \$2 and must be paid by May 1.

**Sailing class:** NASA Sailing Club will hold classes from 9 a.m.-noon Saturdays from May-June. For more information call Richard Hoover at 996-7716.

**Golf lessons:** Golf lessons will be given at the Clear Lake Golf Course. Cost is \$100 for six weeks of lessons.

**Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information, call Larry Wier at x30301.

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## Dates & Data

### Today

**Cafeteria menu:** Special: tuna noodle casserole. Total Health: baked potato. Entrees: steamed salmon steak, baked chicken, fried cod fish, ham steak. Soup: seafood gumbo. Vegetables: French cut green beans, cauliflower with cheese, green peas, black-eyed peas.

### Monday

**Cafeteria menu:** Special: breaded cutlet. Total Health: crispy baked chicken. Entrees: stir fry pork and rice, baked chicken, smoked sausage with German potato salad, French dip sandwich. Soup: cream of broccoli. Vegetables: okra and tomatoes, peas, navy beans, baby carrots.

### Tuesday

**Cafeteria menu:** Special: fried chicken. Total Health: vegetable lasagna. Entrees: Salisbury steak, steamed pollock, vegetable lasagna, French dip sandwich. Soup: split pea and ham. Vegetables: mixed vegetables, French cut green beans, pinto beans, vegetable sticks.

### Wednesday

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon May 3 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For additional information, call Al Jackson at 333-7679.

**Toastmasters meet:** The Space and Toastmasters will meet at 7 a.m. May 3 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

**Cafeteria menu:** Special: stuffed bell pepper. Total Health: baked potato. Entrees: stir fry chicken & rice, wieners & beans, fried fish, western special, beef, chicken sausage, Reuben sandwich. Soup:

seafood gumbo. Vegetables: buttered rice, Italian green beans, corn O'Brien, peas and carrots.

### Thursday

**Cafeteria menu:** Special: barbecue smoked link. Total Health: roasted turkey breast. Entrees: turkey and dressing, beef stroganoff, steamed pollock, French dip sandwich. Soup: tomato Florentine. Vegetables: Spanish rice, lima beans, buttered squash, oriental vegetables.

### Friday

**Cafeteria menu:** Special: meat sauce and spaghetti. Total Health: baked potato. Entrees: rainbow trout, liver and onions, beef cannelloni, ham steak, fried cod fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: steamed broccoli, breaded okra, cut corn, black-eyed peas.

### May 9

**NMA class:** The National Management Association will host a class from 6-9 p.m. May 9, 16 and 23 at the Gilruth Center. "Financial Strategies for Successful Retirement" is the focus of the 10 hour class. Cost is \$50 per couple for members and \$75 for nonmembers. For more information call Richard Hergert at 280-0444.

### May 10

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon May 10 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information, call Al Jackson at 333-7679.

**Toastmasters meet:** The Space and Toastmasters will meet at 7 a.m. May 10 at House of Prayer Lutheran Church on Bay Area Blvd. For additional information, contact Elaine Trainor, x31034.

**PSI meets:** The Clear Lake/NASA

Area Chapter of Professional Secretaries International meets at 5:30 p.m. May 10 at the Holiday Inn on NASA Road 1. For information, contact Elaine Kemp x30556.

### May 13

**FOD Chili Cookoff:** The 17th annual FOD Chili Cookoff will be from 9 a.m.-5 p.m. May 13 at the Gilruth Center. All JSC and contractor employees are invited. Tickets ate \$3 until May 5, then \$4; the price includes a tasting kit and beverages. For tickets, contact Mission Operations or Flight Crew Operations division secretaries. For more information, contact Sandy Griffin at x31056.

### May 17

**Mechanisms symposium:** The 29th Aerospace Mechanisms Symposium, hosted by NASA and Lockheed Missiles and Space Co., will be held May 17-19 at South Shore Harbour Resort and Conference Center. For more information call Dorothy Daigle at 333-7390.

### May 29

**Memorial Day:** Most JSC offices will be closed in observance of the Memorial Day holiday.

### June 14

**PSI meets:** The Clear Lake/NASA Area Chapter of Professional Secretaries International meets at 5:30 p.m. June 14 at the Holiday Inn on NASA Road. Patsy Mitchell will present "Leadership Without Authority." For additional information, contact Elaine Kemp x30556.

### July 4

**Independence Day:** Most JSC offices will be closed in observance of the Fourth of July holiday.

### Sept. 4

**Labor Day:** Most JSC offices will be closed in observance of the Labor Day holiday.

## Swap Shop

### Property

Rent: Condo, Seawall, 1 BR, gulf view, heated pool, security, cable TV, daily, weekly or monthly. 532-4237.

Lease: Key West, 1 BR time share condo, sleeps 4-6, ocean view, June 17-24, fully equipped, \$700. x41215 or 992-8205.

Lease: Barringer Way condo, 2-1, W/D conn, pool storage area, ex cond, new carpet, no pets, \$495/mo. 486-2048.

Sale: KSC, FL, waterfront, 3-2-2, 7% assumable, canal direct to river, new seawall/dock, open split plan, patio, hot tub. (407) 264-0678.

Sale: Santa Fe, 2 acres unimproved, \$17k nego. (409) 943-5232.

Sale: Pearland, Shadycrest Sub, 3-2-2, formals, den, FPL, fenced, trees, \$119.9k. Karen, x35517 or 485-3214.

Sale: San Leon herb farm, 2.5 acres, new 16x80, 3-3 mobile home, 30x50 green house, 30x30 garage, large pond, fenced. 333-6277 or 339-3562.

Sale: Waterfront half acre on Dickinson Bayou, new bulkhead, beautiful trees, \$85k. x31370.

Sale: El Lago, 3500 sq ft colonial, wood floors, 6 BR, study, porch, playroom, trees, \$148k owner financing, 15% down. 326-4973.

Sale: Taylorcrest, 2500+ sq ft, super energy efficient design, new paint, landscaped, deck, spa, security system, \$159.9k. 532-2147.

Rent: El Dorado Trace, 2-2, balcony, FPL, alarm, W/D, pools, tennis, exercise rm, sauna, hot tub, \$600 plus electricity. 333-8126 or 488-1327.

Sale: Camino South, 3-2-2a, high-quality carpet and floors, designer wallpaper, large, bright, updated kitchen/baths, \$79.5k. Kirsten or Reed, 480-3838.

### Cars & Trucks

'90 Chevy full-sz P/U, two-tone, auto, A/C, cruise, alarm, running boards, custom seats, toneau cover, \$11,950 nego. x41215 or 992-8270.

'72 Chevy Chevelle, blue and white, SS396, restored, \$8,300. Mike, 333-2335 or 977-5533.

'92 Pontiac Sunbird convertible, red w/3n int, less than 40k mi, ex cond. (409) 943-5232.

'84 Olds Cutlass Brougham, ex cond, \$1,600 obo. J.C., 616-9149.

'92 Toyota Celica ST, teal, PS/PB, auto, 55k mi, ex cond, \$9,990. (409) 925-2372.

'86 Pontiac Fiero 2M4, gold, auto, AM/FM, 80k mi, good cond, runs great, \$2k. David, x34700.

'82 Porsche 928, 93k mi, auto, sunroof, leather, looks/runs great, \$9.8k. Tom, x33651 or 280-8084.

'86 Buick Skyhawk, A/C, good engine/transmission. Mark, x45444 or 664-7182.

'89 Olds Cutlass Supreme, 64k mi, good cond, \$5,500. Jim, 991-0533.

'80 Dodge Aspen, auto, A/C, 4-dr, AM/FM/cass, green, new paint, 116k mi, \$780. DT, x33242 or 999-8630.

'85 Toyota Cressida, 99.2k mi, \$3,650. 585-8162.

'89 Toyota Supra, black/burgundy, alarm system, cruise, sunroof, tint, spoiler, ex cond, \$9,400. Roger, 484-8837.

'81 Datsun 210, 4-dr sedan, 100k+ mi, needs minor body work, rust, runs well, \$400 obo. Robert, 992-2304.

'87 Chevy IROC Camero, 5.0L 4BBL, 103k mi, \$3.5k. Ken, x34448 or 482-9524.

'85 Chrysler 5th Ave, 4-dr, 81k mi, blue/gray, load-

ed, ex cond, \$2,400. Bob, x33149 or 488-7036.

'90 Dodge custom van, built-in vacuum/ice chest/TV, oak accents, loaded, low mi, extended warr. \$12k. Diane, x47129.

'77 Buick Park Ave, all pwr options, A/C, \$1k, obo. Glenn, x38067 or 480-7019.

'87 Honda Accord LX, auto, 4-dr, PW, PS, PB, PL, stereo cassette, \$4,850. 488-7771.

### Cycles

New bike wheels, DuPont ultra lite composite tri-spike wheels for specialized front and rear cassette wheel, clincher type, were \$1,115, now \$575. 464-8694.

Cruiser bikes, man and lady, \$70 ea; exercise air-gometer bike, \$90. 992-8875.

Western Flyer girl's bike, 20", radical pink, \$40. Larry, x39525 or 482-0969.

### Boats & Planes

Celebrity 19' Bowrider, ready to go, ex cond, reduced to \$9,250. 488-4412.

Alpha 230A windsurfer, 3 sails, 2 masts, for beginners to advanced, ex cond, cost \$1k, now \$350. Lee, 282-3236 or 486-4894.

'75 17' Sonic low profile boat, 115 hp Mercury O/B, trailer, used only in fresh water, \$3250. 334-1119.

Laser 2 sailboat, trailer, spinnaker rigged, trap, vests, \$1,200. x41095 or 486-8185.

Hobie 16 sailbox, new tires/wheels, spare, new baton pocket ends, race rudders, spare parts, \$2k. 992-5832.

'93 Crownline 20' I/O, 5.7 liter OMC engine, depth finder, Halon fire extinguisher, McClain galvanized trailer, \$15k. Bob, x44431 or 286-9902.

Invader 15' ski boat, 85 hp Mercury O/B, power trim, ss prop, galvanized trailer, ex cond, \$1,700. Rick, x32505 or 480-3346.

Boston whaler, 17', 50 hp Mercury O/B, depth finder, radios, \$4,500. 487-5484.

Sovereign 24', ex cond, extra jib, depth sounder, head, stove, sleeps 4, elec start Johnson O/B, recent bottom job, make offer. Mike, 282-2787 or 286-1691.

'88 Invader, 210 cuddly cabin, I/O 200 hp Merc, galvanized trailer, loaded, ex cond. 997-6141.

### Audiovisual & Computers

MS Office Pro 4.2 w/Bookshelf CD-ROM for PC, new. \$320 obo. 286-5831.

286 computer, 1 MB RAM, 40 MB HD, 5.25" FD, monitor, kybd, \$175. 996-5739.

Mac II, 8 MB RAM, 130 MB HD, color monitor, kybd, mouse, S/W, \$650. 996-5739.

Delco 2001 AM/FM/CD car stereo, 16W/ch, 7 band eq, 12 preset stations, new, \$150. Ken, 333-7167.

Panasonic phone w/answering machine, \$49; NCI telecaption machine, ex cond, \$49. 282-5236.

CSX-140 Citizen printer w/GSX color option, slightly used, \$225. Magdi Yassa, 333-4760 or 486-0788.

Fax-modem, Mac comp, external, 9600 fax/2400 data, manuals, cables, ex cond, \$50 obo. x41071.

Mac SE, 4 MB RAM, 20 MB HD, \$395. 488-7771.

Commodore 128, disk drive, monitor/TV, S/W, \$150 obo; Atari 2600 games, best offer; wargames, role-playing games, car wars, call for complete list, best offer for individual items or lot. 286-3172.

### Photographic

Canon EF zoom lenses, 35-80 and 80-200, auto

focus, for Canon Rebel cameras, \$235 of both. Jim, 991-0533.

### Pets & Livestock

AQHA aged gelding, very gentle, anyone can ride, excellent trail horse. \$900. 554-6138.

African Gray Congo parrot, 2 yrs old, good mimic, needs lots of attention, includes cage, toys, 6' climbing tree, \$695; talking Cockatiel, 1 yr old, hand tamed, very affectionate, includes cage, \$65. x37842 or 334-4268.

Kittens, born 5/15/95, white boots w/gray/black striped "M" kitty markings, free. Lore, x38477 or 476-1791.

Part Chow, part Sooner puppy, found 4/1, free. Leslie, x41125 or 332-5278.

Rottweiler puppies, AKC registered, pedigreed, shots, sire and dam family dogs and good with children. Susan or David, 484-7539.

Siberian Husky puppies, AKC registered, black and white, blue eyes, 4 male, 4 female, ready to go by mid to late April, \$250 ea. 991-5280.

Miniature Schnauzer puppies, AKC registered, born 3-10-95, \$255. Derek, x41000 or 997-9263.

### Wanted

Want personnel to join VPSI van pool, Sugar Land and Southwest Houston to NASA area. Alice, x35234.

Want non-smoker to join existing 3-person carpool from Meyerland/Braeswood area. Hours 8:00 to 4:30 nego, 4-dr car w/reasonable back seat space required. Al, x36603, Mel, x30116, or Bob, x37340.

Want personnel to join VPSI vanpool departing Meyerland Park and Ride lot at 7:05 a.m. for JSC. Vanpool consists of on-site personnel working the 8 a.m./4:30 p.m. shift. Travis Moebe, x45765 or Don Pipkins, x35346.

Want Little Tikes, Fisher Price or similar used children's toys for ages 2 and up, particularly large items. Jennifer, x37306 or 486-0177.

Want canoe in good working condition with gear. x32264.

Want housemate to share Kemah 3BR home, 1,000 ft from bay, lg yard and garage, non-smoker, \$400/mo plus 1/2 utilities. Rick, x48842 or 538-4278.

Want someone to clean house in Pearland once every other week on regular basis, references requested, 997-2280.

Want 6x16 ft tandem low bay trailer with brakes. 482-7073.

Want low priced school/work car or truck. 271-7011.

Want gas edger. Rich, x47257 or 996-7630.

### Household

RCA color TV, solid wood console, 27", stereo sound, was \$950, now \$650. x47129.

RCA color TV, console, mahogany, \$50. Mike, 333-2335.

RCA color TV, 13", \$75; dual cassette boombox, new, \$30; Sony AM/FM radio/cassette recorder, new, \$50; coffeemaker, new, \$25. Charlene, x30085.

Two glass coffee tables w/gold leaf wood bases, hexagonal shape, 17x26, \$50 ea; chess table w/onyx board inset/onyx chess and checker pieces, \$50 obo; 3-way lamp, green base, white shade, \$10. 474-3507.

Contemporary, large, comfy, cognac leatherette swivel chair w/foot stool, \$40. x31370.

Modern glass dining table, pedestal base, rectan-

gular beveled glass, 4 upholstered parson's chairs, black, \$450/all or will sell separately. Katie, x33185.

Twin and full bunk bed, blue metal frame, \$100 obo. Cindy, 482-7603.

Dinette set, smoked glass top w/brass pedestal, 4 navy blue chairs, \$50. 488-6070.

Solid-wood entertainment center, \$75; matching couch/love seat, \$300; vinyl recliner, \$50. Teri, 488-3081.

Solid pine qn sz 4-post bed, steps, box/matt, 2 night stands, man's and woman's dressers, blanket chest, was \$4.2k, now \$2k; butcher-block dinette set w/4 padded, rocker/swivel chairs, \$600. Richard, 486-3981.

Qn sz mattress w/frame, \$85. 992-8875.

Hard rock maple table w/4 chairs, \$75; antique oak table, 48"x48" w/4 chairs, \$400; love seat, was \$675, now \$350. 488-5564.

Kg sz oak waterbed w/semi-motionless mattress, 6 drawers, headboard w/mirror and shelves, \$250 obo. 280-0285.

Qn sz bed w/Sealy Posturepedic mattress/headboard, matching chest of drawers/dresser/mirror, country style distressed oak, \$500; med sofa bed/recliner rocker, \$200, or \$600/all. Beverly, 481-1530.

Loose pillow sofa, pastel colors w/Stainguard, \$300; beige recliner w/heat and vibe, \$100; matching pine coffee/end tables, \$30; matching pine hutch/buffet, jelly cabinet, microwave cart, sm round kitchen table w/2 white chairs, \$325. x38954 or 554-5492.

Formal sofa, \$550; antique dresser, \$75; desk, \$75; chair, \$25; lg antique mirror, \$200; TV stand, \$15; Zenith 19" color TV w/remote, \$70, obo all items. x37113 or 286-3019.

Antique furniture, brass, procelain, private collection of high quality antiques, 100-200 yrs old, photos avail. x31057 or 486-1113.

Bassett couch and loveseat w/matching throw pillows, 1 yr old, country style, green and off-white, Scotchguard, painting, \$400. 337-4182.

High-backed

# Open House

## MOD family shares fever with friends

**T**he Mission Operations Directorate recently hosted an open house for employees and their families, inviting guests to "catch the fever" of the human space flight program.

Guests enjoyed tours of facilities and informative videos, and children were treated to additional entertainment with a moonwalk, clowns and appearances by astronauts.

From left to right, top to bottom:

1) In the Bldg. 5 Shuttle Mission Simulator control room, Melanie Miller of the Simulator Operations and Technology Division, left, and Jean Gill of Allied Signal, right, show guests how the instructor consoles operate.

2) Guests visit the shuttle Full-Fuselage Trainer mockup in Bldg. 9.

3) Tom Diegelman, kneeling, and Roger Burke of the Simulator Operations and Technology Division, help young guests write graffiti on the walls of the space station mockup. The mockup has been decommissioned and will no longer be used for training.

4) Carson Minish, son of Tracey Minish of Rockwell, shows off the first-place ribbon he won in the 6- to 8-year-old category of the art contest.

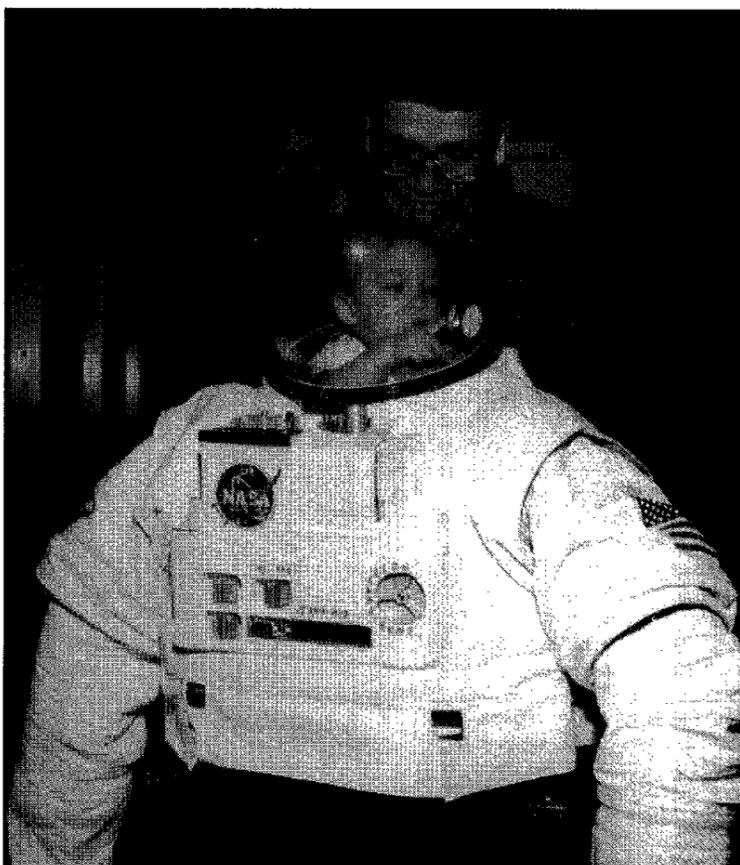
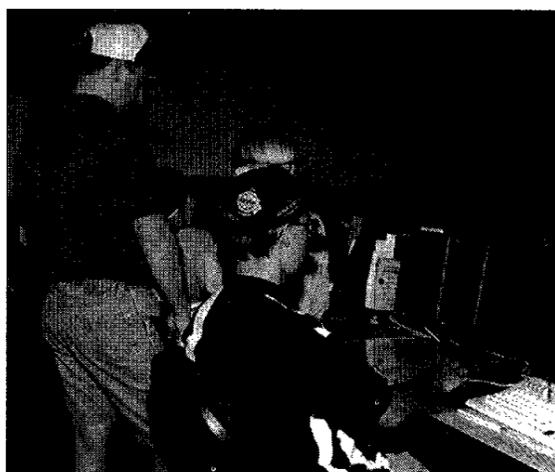
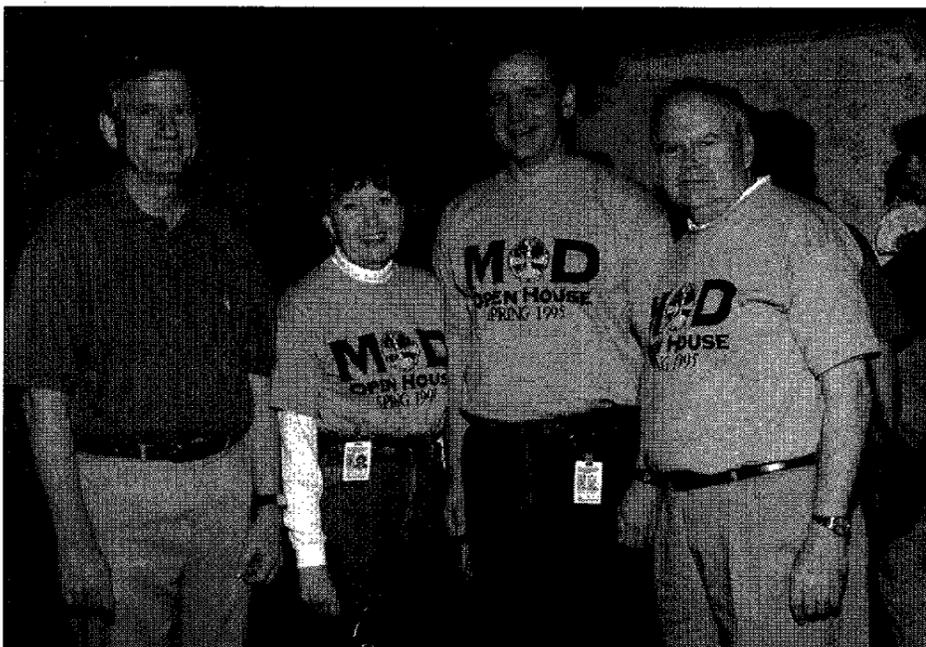
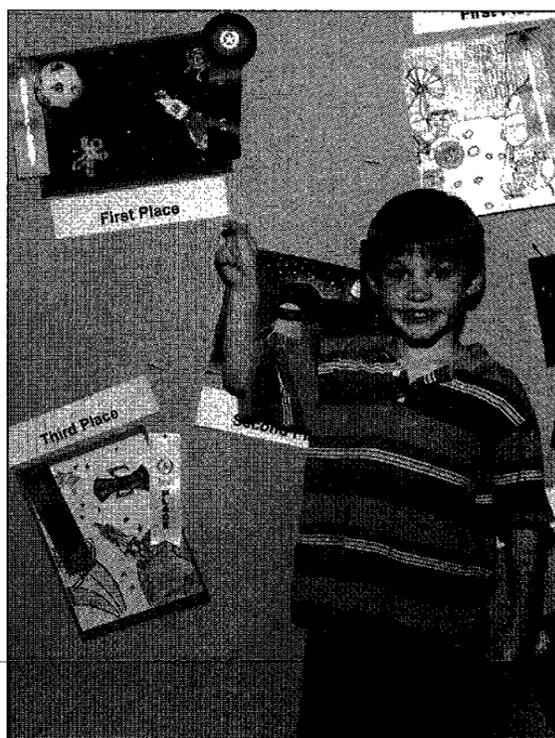
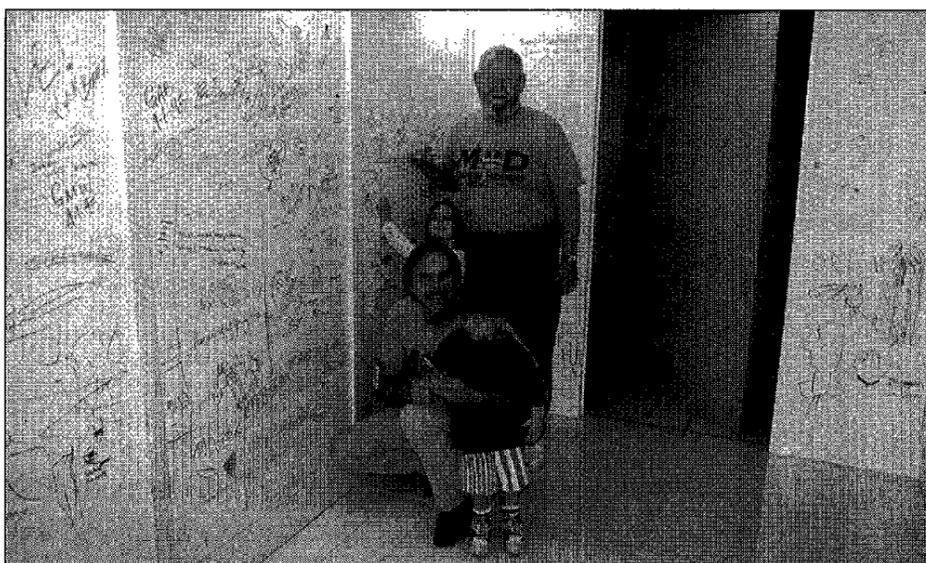
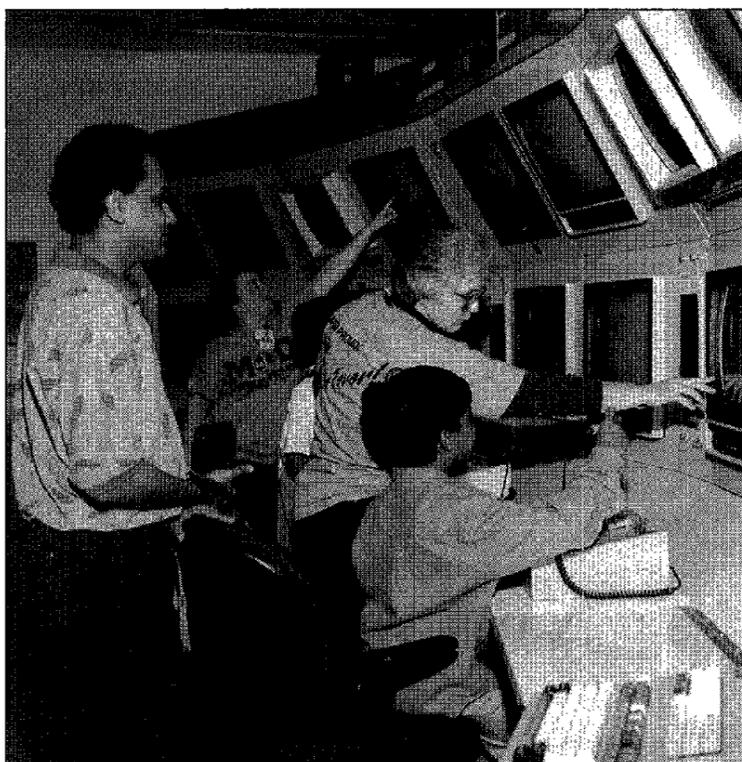
5) Mission Operations Director John O'Neill, right, is joined by, from left, Jim Shannon, assistant director in MOD; Carol Hill, secretary to the deputy and assistant director, and Tom Akers, deputy director.

6) "Children" of all ages simulate shuttle mission activities in the new mission control center.

7) Kids and adults get a chance to fly a shuttle in the Flight Operations Trainer.

8) An astronaut candidate for the 21st Century explores the extravehicular mobility unit.

9) Astronaut Dan Bursch talks with a youngster during the open house. □



# Perspective from space is critical to Earth studies, Goldin says

NASA Administrator Daniel S. Goldin reflected on NASA's efforts to preserve humanity's home world on Earth Day's silver anniversary and promised to continue efforts to better understand the environment.

"In the 25 years since the first Earth Day, we have changed the way we think about our planet. Apollo astronauts captured the Earth as a blue marble against a vast background of darkness—beautiful, but fragile and finite. Our missions to other planets have revealed them to be fascinating and diverse, but also lacking any obvious signs of life. We know of no place like Earth," Goldin said.

He explained that NASA's Mission to Planet Earth captures the spirit of exploration and focuses it back on the planet.

"Only from space can global perspective be obtained," Goldin said. "More information is needed to better understand how all of the parts

of the Earth's environment—air, water, land and life—interact and make life. Mission to Planet Earth, for which NASA has partners across the U.S. government and around the world, has helped reveal the Earth's secrets."

Goldin highlighted several joint projects and how they have helped to better understand the planet.

Working with other agencies and industry, NASA researchers helped establish that human activities were threatening the ozone layer. NASA and NOAA data now indicate that treaties designed to protect ozone are beginning to work.

The TOPEX/Poseidon, a satellite developed by NASA and the French space agency, is providing data on changes in global sea level, and is helping researchers better track El Nino, a physical change in the Pacific Ocean

that alters weather around the globe.

NASA researchers were able to measure the cooling effect that the 1991 eruption of Mount Pinatubo had on the climate. Researchers around the world are still studying the volcano's effect on ozone levels in the tropics. NASA research is helping to understand floods, earthquakes and severe storms. By better understanding them, emergency personnel can better prepare and lessen damage.

"In the longer term, we will need to unravel other mysteries. Will the Earth get warmer? Will sea levels rise, threatening coastal communities? Will rainfall patterns shift? How would climate change affect weather, the frequency of severe storms and the way we live? These are the scientific challenges we will study in the next 25 years," Goldin said.



Earthwatch

## Firefighters take notes from NASA

Fire fighting could be safer and more efficient in the future thanks to an agreement signed last week between NASA and the City of Chicago.

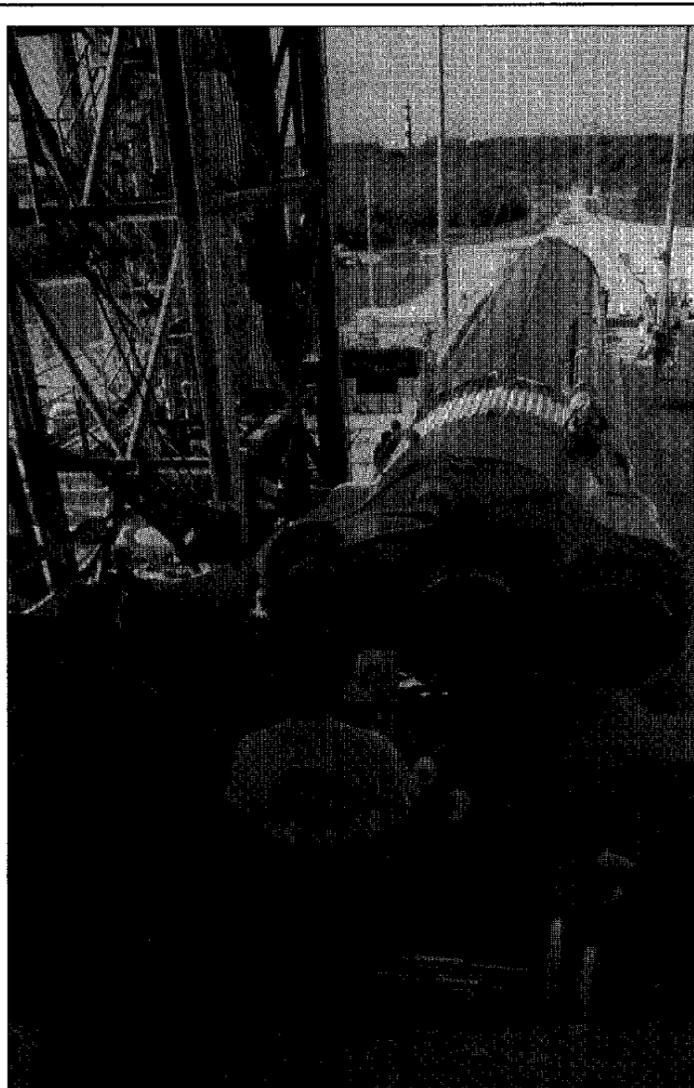
The agreement opens the door for Marshall Space Flight Center and the Chicago Fire Department to work together to apply space program technologies to improving fire fighting and other emergency services.

Fire Commissioner Raymond E. Orozco met with NASA Administrator Daniel S. Goldin and Marshall Director Porter Bridwell in Chicago to discuss various technologies that could be transferred to the department to enhance fire and other emergency services.

"The Chicago Fire Department is a strong innovator in testing, developing and adopting new methodologies and technologies for emergency services," Goldin said. "NASA is looking forward to working with them to explore ways space technology can be used to enhance emergency services. Ultimately, it will be the American people who benefit from what we accomplish here."

The Chicago firefighters' principal interest is in developing a locator system that will enable on-scene authorities to locate, track and, if necessary, rescue firefighters within a 2,400-foot area of operations.

Chicago's second priority is in having NASA attempt to adapt dynamic structural analysis techniques to determine if a structure is in imminent danger of collapse. Such a device would provide fire officials with a means of determining when a structure has to be evacuated by firefighters.



NASA Photo

**GOES TO GO—Workers at Launch Complex 36 of Cape Canaveral Air Station in Florida prepare to raise the Atlas 1 launch vehicle into position for stacking with the Centaur second stage that will boost the GOES-J advanced weather satellite into geostationary orbit. GOES-J will be launched May 19 and provide weather satellite data to NOAA weather forecasters. The launch will be supported by the Merritt Island tracking station at Kennedy Space Center, the Air Force, Jet Propulsion Laboratory tracking stations, and the Goddard Space Flight Center satellite control facilities.**

## Next Friday last chance to apply for teacher workshop

Elementary school teachers who have family working at JSC have until next Friday to sign up for a special aerospace education workshop available only to them.

Coordinator Norma Rhoads of the Public Affairs Office's Education and Information Services Branch said the workshop is scheduled from June 19-23 and is open to teaching family members of civil servants and contractors.

"This is an opportunity for PAO to give something back to the many employees who have helped us throughout the years," Rhoads said. "JSC employees continually help us with workshops that introduce teachers to aerospace, and now we'd like to give some special attention to

those teachers who already have a direct connection to the space program."

The workshop will feature activities including hands-on microgravity experiments, rocketry, space suit familiarization and other activities. JSC experts will give briefings on a variety of subjects, and tours of the Weightless Environmental Training Facility, Automation and Robotics Laboratory, mock-ups in Bldg. 9, Mission Control and shuttle simulators are included. Participants will receive a multitude of educational materials including several printed activity guides and videos.

There is a limited number of participants. For more information, call Rhoads at x30235.

## Mechanisms symposium to be held next month

JSC, in cooperation with Lockheed Missiles and Space, will sponsor the 29th annual Aerospace Mechanisms Symposium from May 17-19 at the South Shore Harbour Resort and Conference Center.

The symposium will feature dis-

cussions of problems related to the design, fabrication, test and operation of aerospace mechanisms. Papers will be presented from engineers from around the world.

For information call Dorothy Daigle at 333-7390.

## STS-70 rehearsal coming up

(Continued from Page 1)

Launch Pad 39B for its liftoff on the STS-70 mission.

A firm target for the mission was being finalized by NASA officials at week's end. The flight could be aimed for launch on June 8 to deploy a NASA Tracking and Data Relay Satellite. If it launches next, STS-70 will represent the 100th manned U.S. space mission in 34 years.

The five-person crew, led by veteran astronaut Tom Henricks, is expected to conduct its countdown dress rehearsal at KSC on May 19.

*Endeavour* also is being readied for flight as technicians reconfigure the orbiter for STS-69, a mission to deploy and retrieve the Wake Shield Facility and a SPARTAN science satellite. Launch is expected around the third week in July.

*Columbia* rolled into its maintenance hangar once *Atlantis* had moved out, heralding the start of preparations for its first flight since last summer. This September, the STS-73 mission will be a 16-day journey to conduct microgravity research in a Spacelab science module in the payload bay.

# Hubble celebrates fifth anniversary in space

NASA's Hubble Space Telescope, celebrated throughout the world as the finest astronomical instrument ever built, celebrated its fifth anniversary in orbit this week.

HST has provided remarkable new views of the universe that have revolutionized astronomers' thinking about a variety of current astronomical mysteries.

"The Hubble Space Telescope is truly a national scientific treasure," said Dr. Wesley Huntress, NASA's associate administrator for space science. "With a rate of discovery that is unprecedented for any modern observatory, Hubble not only has revolutionized astronomy, it has engaged the interest and imagination of the public more than any space science satellite has done before."

Launched April 24, 1990, on the Space Shuttle *Discovery's* STS-31 mission, HST, with a resolving power calculated to be 10 times better than any telescope on Earth, was poised to open a new era in astronomy. Within a few months, however, a flaw was discovered in HST's main mirror that significantly reduced the telescope's ability to focus.

The focusing defect was due to spherical aberration, an optical distortion caused by an incorrectly shaped mirror. Even so, HST's cameras were still able to provide images far superior to any telescope on the ground.

During its first three years of operation, HST provided significant new information and dis-

coveries about the universe, including astonishing images of supernova 1987A and a disk of cold gas fueling a black hole.

Seven astronauts practiced for nearly a year-and-a-half before conducting the first HST servicing mission, one of the most challenging missions NASA had ever attempted.

On December 2, 1993, the STS-61 crew launched on *Endeavour* for an 11-day mission with a record five space walks.

Watched by millions worldwide on live television, the astronauts endured long hours of challenging space walks to install instruments containing the corrective optics and replace the telescope's solar arrays, gyroscopes, and other electronic components.

The crew completed everything it set out to do and the mission was declared a success. After five weeks of engineering check-out, optical alignment and instrument calibration, the confirmation of success came as the first images were received on the ground from the space telescope.

Based on their scientific merit and long-term importance in advancing the field of astronomy, HST program and project scientists selected the following "Top 10" list of discoveries from hundreds of findings made over the past five years. HST has:

- Offered the first conclusive evidence for the existence of immense black holes, millions or billions of times the mass of Earth's Sun;
- Showed that the universe might be much younger than had been previously thought. This was accomplished by calculating the universe's expansion rate based on an accurate HST distance measurement to a remote galaxy;
- Given the first direct visual evidence that the universe is evolving as predicted in Big Bang cosmology, resolving the shapes of the farthest galaxies ever seen;
- Discovered that quasars, very distant and remarkably bright objects, are even more mysterious than thought because many are not in the cores of galaxies, but are isolated in space;
- Suggested that dark matter in the universe is more exotic than previously thought, by finding that nature doesn't make enough of the extremely small Red Dwarf stars that were once a leading candidate for the universe's "missing mass";
- Supported the Big Bang theory by refining estimates of the amount of deuterium in space, an element created in the initial cosmic fireball that gave birth to the universe;
- Solved the mystery of intergalactic clouds of hydrogen by showing that they are really gigantic halos of galaxies;

• Implied that planets, and presumably life, might be abundant in the universe by discovering disks of dust that might be embryonic planetary systems around young stars;

• Provided important details and surprising findings of the spectacular collisions of comet Shoemaker-Levy 9 with Jupiter last year; and

• Revealed dynamic weather changes on nearly all the planets with a clarity once attainable only with spacecraft flybys. Scientists found that most planets' atmospheres are much more active than previously believed.

Not only has HST advanced science's understanding of the universe, it also is making direct contributions through a variety of technological spinoffs. During 1994 a new, non-surgical breast biopsy technique was developed using imaging charge coupled devices, originally developed for HST's Imaging Spectrograph. This technology now enables doctors to precisely locate a suspicious lump in a woman's breast and use a needle, instead of a scalpel, to extract a sample of tissue for study.

HST was designed to work on orbit for 15 years. To keep HST running smoothly, three additional servicing missions are planned.

HST's dramatic images are available via the Internet in a special Hubble 5th Anniversary Home Page. Users can access this page using the following address: <http://www.stsci.edu/pubinfo/BestOfHST95.html>.